# Drug Checking — Quarterly Report

PHILADELPHIA, PENNSYLVANIA | DRUG CHECKING | Q1 & Q2 2023

**PURPOSE:** This report provides up-to-date information regarding the drug supply in Philadelphia, Pennsylvania, United States of America, including quantitative data on the purity of fentanyl, xylazine, cocaine, methamphetamine, and more in various sample types analyzed.

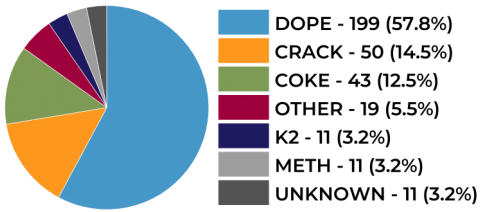
**OVERVIEW:** Traditional drugs (e.g., heroin, fentanyl, cocaine, methamphetamine) are commonly identified among drug samples in cities across the United States, albeit at varying purities and combinations. Novel psychoactive substances (NPS) continue to appear within the drug supply, masked as traditional drugs or added to traditional drug preparations. Nationally, the drug supply remains a dynamic and evolving environment, with respect to the active drug components, cutting agents, and/or adulterants added to drug preparations. The drug supply and drug use trends can be different from city to city or even within a given community, requiring specific regional or local assessments. Accurate understanding of drug materials and the drug supply in real-time is imperative for effective public health and safety preparedness and response.

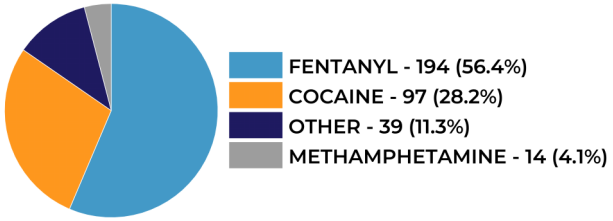
**OBJECTIVE:** A partnership between the Center for Forensic Science Research and Education (CFSRE) and the Philadelphia Department of Public Health (PDPH) has been established to accurately assess the drug supply in Philadelphia, Pennsylvania. Samples were provided to PDPH staff conducting field-based harm reduction supply distribution and forwarded to the CFSRE for analysis. The CFSRE laboratory utilizes novel approaches for the analysis of drugs using comprehensive non-targeted data acquisition by gas chromatography mass spectrometry (GC-MS) and liquid chromatography quadrupole time-of-flight mass spectrometry (LC-QTOF-MS). The scope of analysis for testing contains more than 1,100 drugs, including a vast majority of NPS and relevant substances. This initiative was established as a comprehensive effort examining various drug materials and drug forms. All drug testing results are summarized in this report, with notable results selected for emphasis. Note: The results reported herein represent a subset of the drug supply and do not represent the drug supply in its entirety.

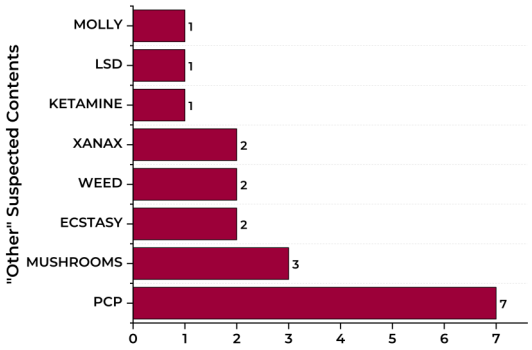
## SUMMARY & RECENT NOTABLE FINDINGS

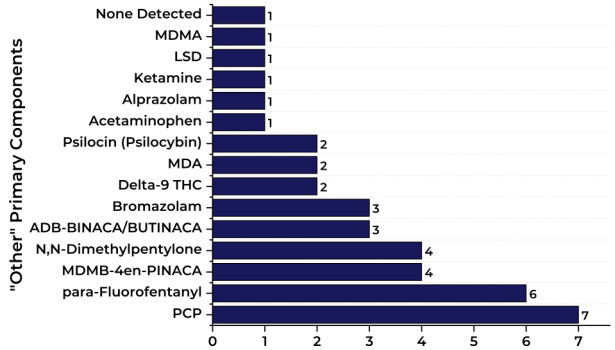
- 344 samples were analyzed between January 1, 2023, and June 30, 2023.
- ***N*-Desethyl Isotonitazene** (n=3) was detected in dope samples alongside fentanyl, xylazine, bromazolam, flubromazepam, and caffeine.
- **Bromazolam** (n=2) was detected without opioids in purported dope samples.
- Coke (n=6) & crack (n=4) samples contained fentanyl. One methamphetamine sample contained fentanyl; however, it was noted as known contamination.
- Nearly all dope samples (99%) contained fentanyl and/or *para*-fluorofentanyl.
- Over the last 12 months, the average amount of fentanyl in dope samples remained mostly consistent while the average amount of xylazine increased 34%.

## SUSPECTED CONTENTS vs. PRIMARY COMPONENT




*Note: "Suspected contents" (left) refers to the purported sample identify, not necessarily the "sold as" designation. "Primary component" (right) reflects the largest substance, by peak area, detectable during GC-MS analysis. (See Disclaimer on Page 3.)*

**Table 1: Descriptive Statistics for Drug Amount* Based on Suspected Contents**

| Drug | Suspected | N | Mean | Median | Min. | Max. |
|---|---|---|---|---|---|---|
| Cocaine | Coke | 42 | 37.0% | 32.9% | 6.4% | 85.2% |
| Lidocaine | Coke | 31 | 24.6% | 16.8% | 1.1% | 55.0% |
| Xylazine | Coke | 8 | 14.4% | 4.8% | 0.9% | 44.8% |
| Fentanyl | Coke | 6 | 3.8% | 2.2% | 1.0% | 9.0% |
| 4-ANPP | Coke | 5 | 0.7% | 0.5% | 0.3% | 1.4% |
| Caffeine | Coke | 1 | -- | -- | 2.2% | -- |
| Cocaine | Crack | 49 | 69.8% | 72.0% | 16.7% | 99.0% |
| Fentanyl | Crack | 4 | 0.6% | 0.7% | 0.1% | 1.0% |
| Xylazine | Crack | 4 | 6.4% | 3.9% | 1.3% | 16.3% |
| 4-ANPP | Crack | 2 | -- | -- | 0.2% | 0.3% |
| *para*-Fluorofentanyl | Crack | 1 | -- | -- | 0.5% | -- |
| Lidocaine | Crack | 1 | -- | -- | 11.9% | -- |
| Caffeine | Crack | 1 | -- | -- | 0.5% | -- |
| Fentanyl | Dope | 177 | 14.0% | 12.4% | 0.2% | 40.0% |
| Xylazine | Dope | 177 | 44.2% | 45.1% | 0.9% | 71.8% |
| 4-ANPP | Dope | 172 | 2.4% | 2.0% | 0.1% | 10.1% |
| *para*-Fluorofentanyl | Dope | 53 | 2.7% | 1.0% | 0.2% | 39.3% |
| Caffeine | Dope | 39 | 4.2% | 1.1% | 0.1% | 23.5% |
| Heroin | Dope | 20 | 2.0% | 1.8% | 0.1% | 4.7% |
| Lidocaine | Dope | 17 | 2.8% | 0.8% | 0.2% | 19.0% |
| Cocaine | Dope | 6 | 6.7% | 5.4% | 0.4% | 16.8% |
| Methamphetamine | Meth | 13 | 62.6% | 52.9% | 50.3% | 85.7% |
| Cocaine | Meth | 2 | -- | -- | 0.4% | 0.5% |
| Fentanyl | Meth | 1 | -- | -- | 1.2% | -- |
| Xylazine | Meth | 1 | -- | -- | 3.2% | -- |
| *para*-Fluorofentanyl | Meth | 1 | -- | -- | 0.6% | -- |

*Note: Drug amount (as referred to as "purity" or "concentration") is the proportion or percent of the sample that consists of a single detected drug or substance.

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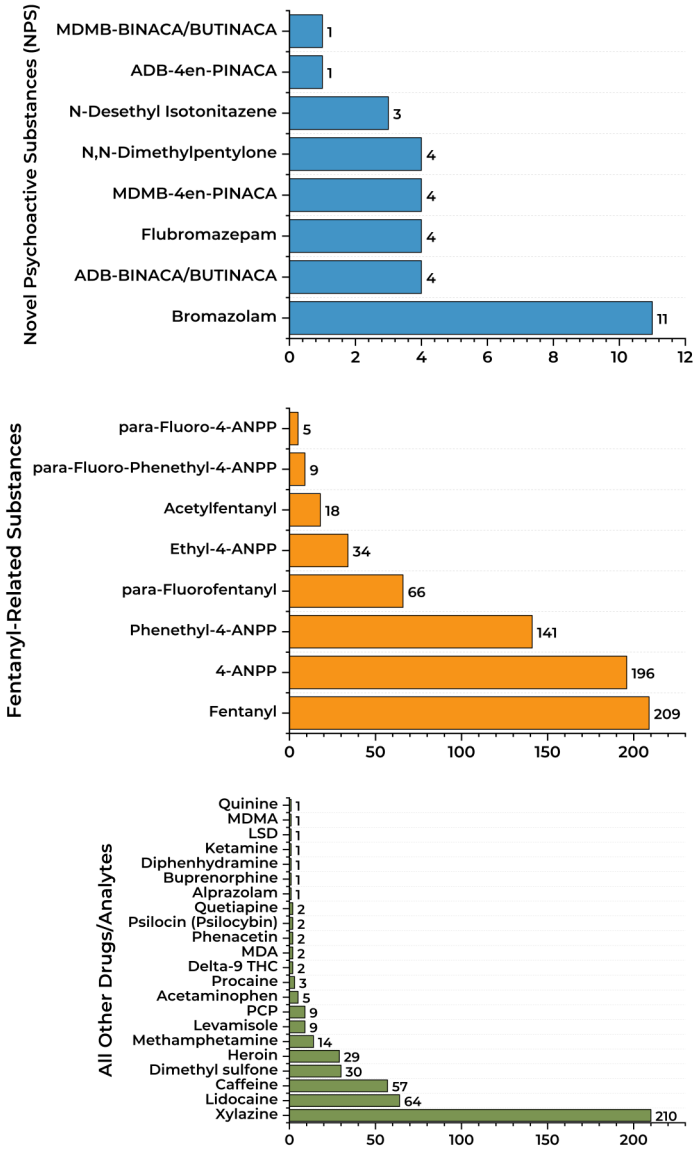
## QUALITATIVE RESULTS — ALL TYPES




**SURVEILLANCE:** *Qualitative results* indicate a drug is detected in a sample. The qualitative data (left) represent drugs detected during the referenced quarters only. The numbers represent the totality of substances encountered during our comprehensive analysis. The substances are broadly grouped as denoted. Each data point represents an individual drug detected. Samples commonly (more than 75% of occurrences) contained more than one drug or substance; therefore, the number of identifications exceeds the total number of samples analyzed (n=344).

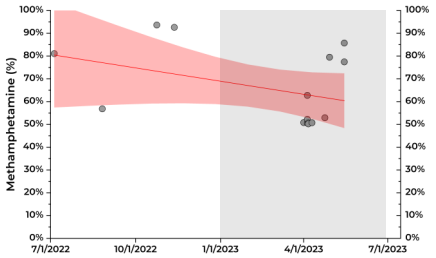
The drug supply in Philadelphia, PA, remains diverse as a variety of substances were detected during this reporting period. There were more than twenty traditional drugs and/or adulterants detected, eight novel psychoactive substances (NPS), and seven fentanyl related substances. The magnitude of identifications reported herein closely align with the CFSRE's toxicology datasets and NPS Discovery quarterly trend reports.

**TREND ANALYSIS:** *Quantitative results* indicate drug amount, also referred to as purity (i.e., the proportion of a drug in the sample). The quantitative data (right and below) presented within this report illustrate the 12-month period preceding. The drugs represented were the most frequently encountered. Each data point represents an individual sample and is plotted against its associated date of collection. A linear regression trend line is plotted with 95% confidence of the moving average to show changes in drug amount (%) over time.

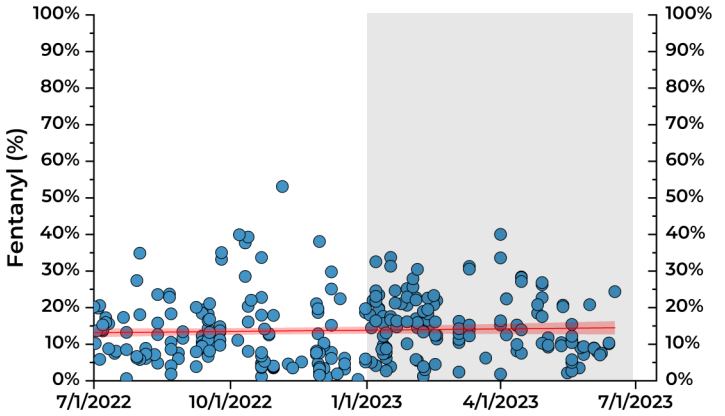
**Table 2: Average Drug Content in Dope Samples**

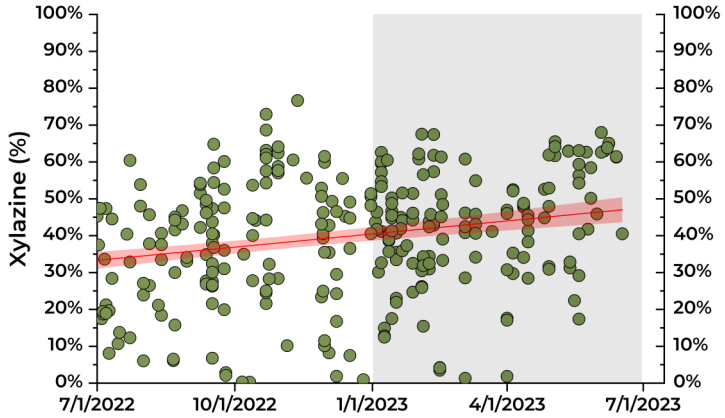
| Quarter / Year ▸ | Q3 2022 | Q4 2022 | Q1 2023 | Q2 2023 |
|---|---|---|---|---|
| Fentanyl (%) | 12.4% | 13.1% | 14.9% | 13.9% |
| Xylazine (%) | 34.3% | 38.5% | 39.5% | 46.1% |

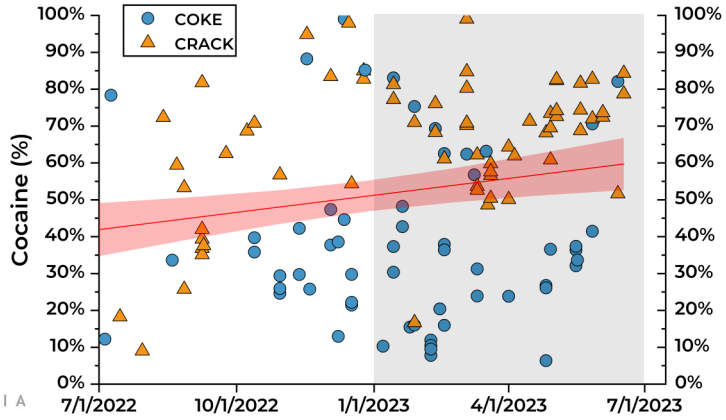
In Philadelphia, PA, the **average amount of fentanyl** in dope samples remained relatively consistent from Q3 2022 to Q2 2023. Xylazine content in dope samples has continued to increase quarter over quarter, with Q2 2023 showing the highest average amount. In Q1 and Q2 2023, solid crack samples generally contained more cocaine than powdered coke samples. The amount of methamphetamine per "meth" sample varied; however, data points were limited.




## QUANTITATIVE RESULTS — BY TYPE

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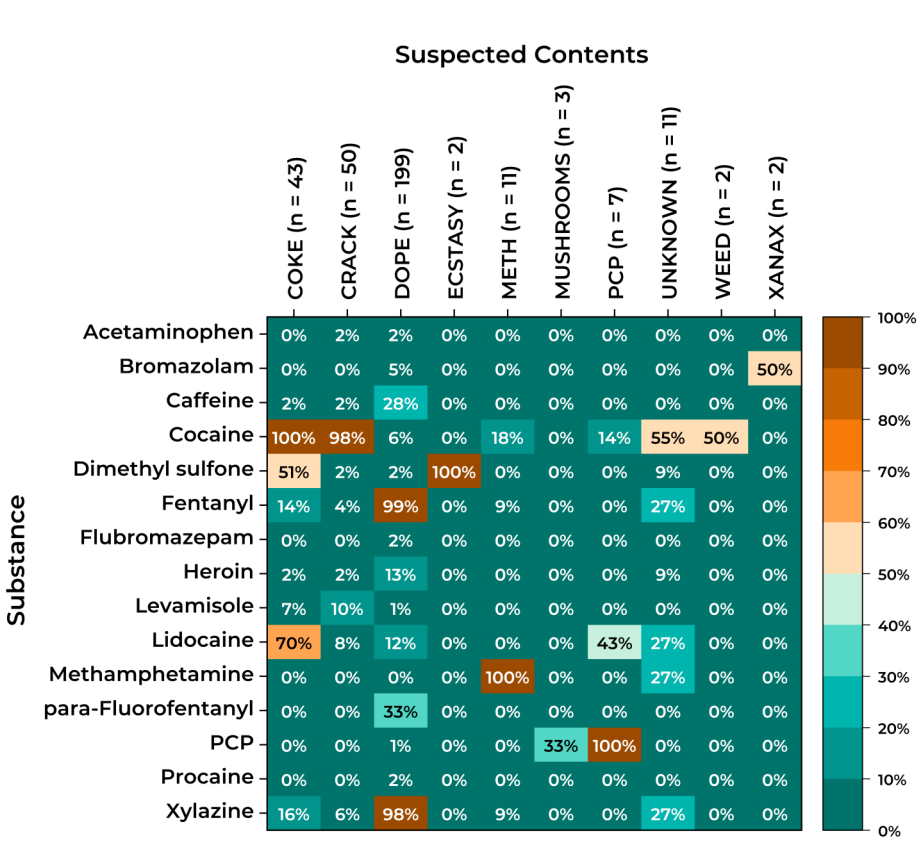
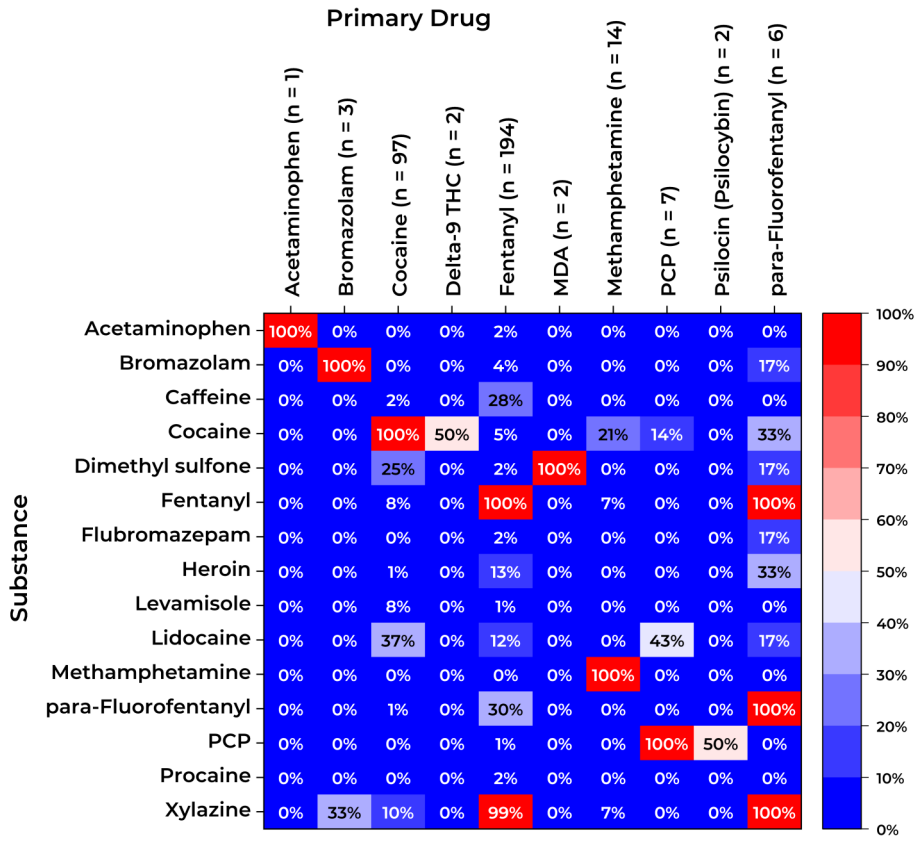
**ADULTERATION:** The below matrix (left) shows the number of instances a substance was detected, grouped to the suspected contents of the sample. The matrix (right) shows the number of instances a substance was detected, grouped to the primary drug in the sample. The primary drug listed is not always a psychoactive substance. The number listed represents a single occurrence of the intersecting group labels with the column being the dominant group. Samples commonly contained more than one drug and/or adulterating substance. The sum of numbers per row or column exceeds the total number of samples analyzed (n=334); however, the individual number per intersection does not exceed the sample set data size (i.e., the reported "n" in each column).

In Philadelphia, PA, in Q1 and Q2 2023, nearly all purported dope samples (99%) contained fentanyl and nearly all (99%) were adulterated with xylazine. Fentanyl-containing dope samples contained a variety of other drugs and adulterating substances. Heroin was not commonly encountered (being found in only 11% of dope samples) and never as the primary drug. *para*-Fluorofentanyl continues to appear in dope samples, with a few occurrences as the primary drug component. Coke samples were commonly adulterated with lidocaine and dimethyl sulfone, while crack samples were less commonly adulterated with these substances. Other samples types (e.g., weed, mushrooms, PCP) were not commonly adulterated and contained their expected primary drug (which, due to low occurrence, may not be listed, e.g., THC).

## DRUG COMBINATIONS — BY SUSPECTED CONTENTS




## DRUG COMBINATIONS — BY PRIMARY DRUG

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***DISCLAIMER:*** *There are limitations to the data presented. The dataset is not representative of the entirety of the Philadelphia drug supply. Samples and types were not selected at random. Quantitative analysis was only performed on samples containing sufficient material. Quantitative analysis was only performed for a select number of drugs and adulterants. "Suspected contents" refers to the purported sample identify, not necessarily the "sold as" designation. "Primary component" reflects the largest substance, by peak area, detectable during GC-MS analysis.*